Subject	Year	Month	
Mathematics	8	January	Balcarras From strength to strength

Topic:

LINEAR SEQUENCES — 4 LESSONS

Content (Intent)

Prior Learning

Y7 Sept :

- Filling the gaps in any given sequence
- Find the nth term of a linear sequence

Future Learning

Year 9 : Fibonnacci sequences and quadratic sequences

(with a recap on linear)

Objectives

- Generate terms of a sequence from a **term-to-term rule**
- Generate terms of a sequence from a **position-to-term rule**
- Find the nth term of a given sequence
- Use the nth term of a sequence to deduce if a given number is in a sequence

For teaching purposes

POSSIBLE QUESTIONS

- Show me a sequence that could be generated using $4n \pm c$.
- What's the same, what's different: 4, 7, 10, 13, 16, …. , 2, 5, 8, 11, 14, … , 4, 9, 14, 19, 24, …. and 4, 10, 16, 22, 28, …?
- The 4^{th} term of a linear sequence is 15. Show me the nth term of a sequence with this property. And another…
- Convince me that the nth term of the sequence 2, 5, 8, 11, … is 3n -1 .

POSSIBLE MISCONCEPTIONS

- Kenny says the 171 is in the sequence 3, 9, 15, 21, 27, … Do you agree with Kenny? Explain your reasoning.
- may think that the nth term of the sequence 2, 5, 8, 11, … is n + 3.
- may think that the (2n)th term is double the nth term of a linear sequence.
- may think the nth term of the form 'ax± b' must start with 'a'.

Pedagogical notes (implementation)

If the pupils understand the 3 times table can be described as '3n' then the linear sequence 4, 7, 10, 13, … can be described as the 3 times table 'shifted up' one place, hence 3n + 1.

Exploring statements such as 'is 171 is in the sequence 3, 9, 15, 21, 27, ..?' is a very powerful way for pupils to realise that 'term-to-term' rules can be inefficient and therefore 'position-to-term' rules (nth term) are needed.

Notation

T(n) is often used when finding the nth term of sequence

How will understanding be assessed & recorded (Impact)

End of term Assessment in March
End of Year Assessment in June
8BAM9 Sequences

How can parents help at home?

MathsWatch clips (Qualification KS3)
A11a, A11b, A11c

Further reading/discussion

Reading / Enrichment

KM: Spreadsheet sequences

KM: Generating sequences

KM: Brackets and sequences

KM: Maths to Infinity: Sequences

KM: Stick on the Maths: Linear sequences

NRICH: Charlie's delightful machine

NRICH: A little light thinking

NRICH: Go forth and generalise

Literacy

Sequence
Linear
Term
Difference
Term-to-term rule
Position-to-term rule
Ascending
Descending

Numeracy Links

Careers Links

Designer
Scientist
Landscaper